

**MULTIMEDIA INFORMATION PROCESSING UNIT AND IMAGE
INFORMATION PROCESSING UNIT**

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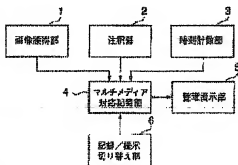
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Abstract of JP 2001119653 (A)

PROBLEM TO BE SOLVED: To provide a multimedia information processing unit that automatically arranges image information, depending on an acquired time and position and that exhibits the arranged information. SOLUTION: An image acquisition section 1 acquires image information of a still image or a dynamic image, a comment section 2 enters a graphic, sound and a hand-written memo to be attached to the image information acquired by the image acquisition section 1 as comments, a time counter section 3 counts the time when the image acquisition section 1 acquires the image information. Furthermore, a multimedia compatible storage section 4 stores the image information acquired by this image acquisition section 1, the comments entered by the comment section 2, and the time counted by the time counter section 3 in cross-reference with each other. Then an arrangement exhibit section 5 arranges the image information and the comments stored in the multimedia compatible storage section 4, depending on the time stored in cross-reference with the image information and the comments and exhibits the arranged information and comments.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the multimedia information processing unit and image information processing unit which gain and present the picture information of a still picture or an animation, and relates to the multimedia information processing unit and image processing device which can arrange picture information automatically by the time and the position which were acquired especially, and can be shown.

[0002]

[Description of the Prior Art] What is called the digital still camera and digital movie cam that gain the picture information of a still picture or video have been variously developed by carrying out image formation of the object image on CCD with improvement in semiconductor manufacturing technology in recent years and an image processing technique.

[0003] In the latest digital still camera, there are some which it not only can record a still picture, but can attach notes of a recording date, a sound, etc. to a still picture. On the other hand, a digital movie cam not only also records an animation and a sound, but has some which can attach notes of a recording date, a title, etc. And usually these digital still cameras and digital movie cams are equipped with the method of arranging so that it may be easy to manage the recorded still picture or animation, and notes.

[0004] Here, it takes up as an example about the conventional arrangement method in a digital still camera and a digital movie cam with a notes option. This arrangement method can be classified as follows.

[0005] (1) A page turning-over type (2) list-display type (3) directory type (4) album type (1) page turning-over type, For example, it displays in order so that a page may be turned over from the still picture which recorded first the still picture currently recorded on the camera body by the digital still camera with a liquid crystal display, It is a method which reproduces notes of the sound added to the still picture which pushed the sound button and was displayed, or has displayed enough the time which recorded the still picture which pushed the date button and was displayed on a liquid crystal display, and carries out it.

[0006] In the case of a digital movie cam, an animation after pushing a record button until it stops record is divided as one animation, it displays it on a liquid crystal display by using the picture of the beginning of the divided animation as a representative picture image, and carries out page turning over of this representative picture image. Record and reproduction of a still picture or an animation are set up with a mode switching button, and the passing <a thing> on display of a still picture is performed by pushing a page turning-over button.

[0007] In this page turning-over type, the still picture recorded in the camera body can be checked easily, and reproduction or a display of notes is also easy. However, since it was necessary to carry out page turning over repeatedly until the still picture currently looked for is found when a huge number of still pictures and animations are recorded, since page

turning over can be carried out for every sheet, there was a problem that search took time. [0008]The list display type of (2) transmits the still picture and notes which were recorded by the digital still camera to a personal computer, for example, It is the method of displaying notes of the time etc. which carried out the list display of the thumbnail image (reduction image), and recorded the transmitted still picture under each thumbnail image on the display of a personal computer. Reproduction of notes of a sound clicks and chooses with a mouse one of the thumbnail images by which the list display was carried out, and is performed by pushing a sound reproduction button. In the case of a digital movie cam, the thumbnail image of a representative picture image is used for a list display.

[0009]In this list display type, the still picture or animation currently looked for can be easily specified from the thumbnail image by which the list display was carried out. However, when long term use of a digital camera with a notes option or the digital movie cam was carried out, for example, a huge number of still pictures and animations were recorded and it transmitted to a personal computer, the still picture or animation currently looked for out of a huge number of list displays had to be found, and the user's burden was heavy.

[0010]There is JP,10-91585,A (a portable information processor and an information processing method for the same) as another list display type example, for example. This device incorporates schedule contents as a still picture with a camera, While displaying and carrying out the list display of the mark which shows the existence of a schedule to the calendar for one month by arranging an icon (the inside of a specification schedule stamp) including information, including the time of a schedule, etc., on the still picture, The schedule contents containing the still picture incorporated by choosing this mark are displayed.

It can be regarded as one of the methods which arranges the incorporated still picture.

[0011]The still picture which expresses the contents of that schedule briefly can be searched with this device by carrying out the list display of the mark showing each schedule to the calendar of calendar state, and choosing one of marks of this as it. However, a still picture cannot be searched with this device from a schedule, and a still picture without a schedule cannot be searched with it.

[0012]When the directory type of (3) transmits a still picture and an animation to a personal computer with a list display type, it is transmitted to the directory which attached the name representing the still picture and animation. A list display type can be regarded as all the still pictures or animations being transmitted to one directory. After choosing whether the list display of the still picture or animation transmitted in which directory is carried out, the list display of it is carried out.

[0013]In this directory type, since a related picture is arranged in one directory, the number of the still pictures or animations by which a list display is carried out like a list display type cannot become huge easily. However, it is necessary to attach a suitable directory name each time, and a user has forced a burden at the time of transmission. When the suitable directory name was not attached at the time of search, or when a user forgot what kind of directory name was attached, there was a problem that it became difficulty which should be chosen from the list displays of a directory name.

[0014]The album type of (4) is the method of sticking the still picture or animation

transmitted to the personal computer on the page created, for example with a word processor the same with sticking a film photo on pasteboard and arranging it. It can also be set up reproduce automatically the sound added when the added time was written in under the picture or the still picture was clicked when sticking on a page.

[0015]In this album type, choice and order of the still picture or animation stuck on a page can be decided arbitrarily. However, when the user needed to decide choice and an order and a huge number of still pictures or animations were arranged, there was a problem that the rating which a user is forced became huge.

[0016]

[Problem(s) to be Solved by the Invention]As mentioned above, in the conventional arrangement method, it could be incompatible in arranging acquired multimedia information, such as picture information with notes, without applying a burden to a user, and searching.

[0017]This invention is made in consideration of such a situation, and is a thing.

The purpose is to provide the multimedia information processing unit and image processing device which can arrange picture information automatically by ***** and can be shown.

[0018]

[Means for Solving the Problem]In order to attain the above-mentioned purpose, this invention acquires acquisition time of picture information, matches this acquired time with picture information and notes, memorizes it, arranges picture information and notes by this memorized time, and is shown.

[0019]In this invention, it is only photoing a picture, for example, and suitable picture arrangement will be performed, without applying a burden to a user, since each picture is arranged automatically and shown according to photographing time.

[0020]This invention acquires an acquisition position of picture information, matches this acquired position with picture information and notes, memorizes it, arranges picture information and notes by this memorized position, and is shown.

[0021]In this invention, it is only photoing a picture, for example, and suitable picture arrangement will be performed, without applying a burden to a user, since each picture is arranged automatically and shown according to a camera station.

[0022]This invention acquires acquisition time and an acquisition position of picture information, matches with picture information and notes this time and position that were acquired, memorizes them, arranges picture information and notes by this time and position that were memorized, and is shown.

[0023]In this invention, it is only photoing a picture, for example, and suitable picture arrangement will be performed, without applying a burden to a user, since each picture is arranged automatically and shown according to photographing time and a camera station.

[0024]This invention manages schedule information of an individual or a group, Schedule information selected from these schedule information to manage is further matched with picture information and notes, and is memorized, and it is preferred for this schedule information to arrange picture information and notes, and to show.

[0025]In this invention, it becomes possible to arrange a picture in a suitable part on a schedule of an individual or a group automatically, and to show it to it further, for example etc.

[0026]

[Embodiment of the Invention] Hereafter, the embodiment of this invention is described with reference to drawings.

[0027] (A 1st embodiment) A 1st embodiment of this invention is described first.

[0028] Drawing 1 is a figure showing the outline composition of the multimedia information processing unit concerning a 1st embodiment of this invention, and drawing 2 is a figure showing an example of the appearance of the multimedia information processing unit of this 1st embodiment.

[0029] As shown in drawing 1, the multimedia information processing unit of this 1st embodiment, The image acquisition section 1 which gains picture information, such as a still picture or an animation, and the comment section 2 which attaches notes to the picture information which the image acquisition section 1 gained, the time which calculates the time which gained picture information -- calculation -- with the part 3, and the still picture or animation gained by the image acquisition section 1, the notes added by the comment section 2, and time -- calculation -- with the multimedia correspondence storage parts store 4 which makes the time calculated in the part 3 correspond, and memorizes it. the information memorized by the multimedia correspondence storage parts store 4 -- time -- calculation -- with the arrangement presentation part 5 which the time calculated in the part 3 arranges and is shown. It comprises the record/presentation switch part 6 which chooses whether the multimedia information memorized [whether multimedia information (picture information to which notes (it is hereafter called media information) of a figure, a sound, a handwriting memo, etc. were given) is acquired, and] by the multimedia correspondence storage parts store 4 is shown. Hereafter, each part including correspondence with drawing 2 is explained.

[0030] The image acquisition section 1 gains picture information, such as a still picture and an animation. For example, it comprises a camera, a TV receiver, a video recovery machine, etc. It is constituted from the camera 1a attached to the main part, and the shutter release 1b which specifies the timing which incorporates a still picture when gaining a still picture by the example of drawing 2.

[0031] The comment section 2 inputs notes of a figure, a sound, a handwriting memo, etc. to the picture which the image acquisition section 1 acquired. It consists of a graphical input means which comprises the cursor 2a, button 2b, and the pointer 2c for inputting a figure, and a sound input means which comprises the microphone 2d for inputting a sound in the example of drawing 2. By leaning the cursor 2a which constitutes a graphical input means vertically and horizontally, the pointer 2c is moved on the arrangement presentation part 5a which comprises a liquid crystal display. Button 2b specifies the position of the pointer 2c on a screen by clicking. The microphone 2d inputs the sound of a sound or the circumference.

[0032] time -- calculation -- the part 3 calculates the date and time, in order to identify when the picture information which the image acquisition section 1 gained was gained. For example, it comprises a digital clock.

[0033] the picture information from which the image acquisition section 1 gained the multimedia correspondence storage parts store 4, the media information which the comment section 2 inputted to the picture information, and time -- calculation -- time which the part 3 calculated and when the image acquisition section 1 gained picture information is made a set, and is matched and memorized. For example, it comprises a

hard disk with a file system.

[0034]the information the arrangement presentation part 5 was remembered to be by the multimedia correspondence storage parts store 4 -- time -- calculation -- it arranges and shows using the time which the part 3 calculated. It is constituted from the liquid crystal display 5a for showing picture information and media information, and the loudspeaker 5b for showing a sound by the example of drawing 2.

[0035]It is chosen whether record/presentation switch part 6 presents the information memorized [whether multimedia information is recorded and] by the multimedia correspondence storage parts store 4. It is constituted from the example of drawing 2 by the slide switch 6a, multimedia information is acquired in the state where it slid to the left, and information is shown in the state where it slid to the right.

[0036]Hereafter, a still picture is explained taking the case of a figure and a sound as media information which the comment section 2 inputs as a picture which the image acquisition section 1 acquires.

[0037]If the slide switch 6a is made to slide to the left, this multimedia information processing unit will acquire multimedia information, and will be in the recorded state memorized to the multimedia correspondence storage parts store 4.

[0038]First, a still picture is gained using the camera 1a. Acquisition of this still picture is performed when the shutter release 1b is pushed. The gained still picture is memorized by the multimedia correspondence storage parts store 4, and the memorized still picture is displayed on the liquid crystal display 5a. In the multimedia correspondence storage parts store 4, drawing 3 shows signs that a still picture, a figure, and time are memorized, and explains only memory of a still picture here. As it incorporates as a monochrome image, for example, is shown in a2, a still picture is changed into the procession of 0 and 1, and is saved at a file. The still picture saved at this file is displayed on the liquid crystal display 5a.

[0039]time -- calculation -- the part 3 calculates the time which gained the still picture with the camera 1a. Time calculates time and time like "18:28 35 seconds on July 7, 1999", for example.

[0040]Next, notes of a figure are inputted on the picture displayed by the comment section 2 on the liquid crystal display 5a. Here, the example which inputs a circular figure is taken up and explained. Drawing 4 shows signs that a circular figure is inputted, and explains them hereafter according to this drawing 4. A circular center is determined as P0 by moving the pointer 2c which leaned the cursor 2a vertically and horizontally, and was displayed on the liquid crystal display 5a, and pushing button 2b with desired coordinates. If the cursor 2a is leaned with button 2b pushed and the pointer 2c is moved, as shown in drawing 4, P0 will be set as a circular center and the round shape which makes the radius r the line segment which connects P0 and the coordinates P1 of a pointer will be displayed on the liquid crystal display 5a. If button 2b is detached to adjust the radius r and fix a round shape, looking at this round shape, the radius of a circle will be fixed and the input of a figure will be completed. The multiple input of the figure may be carried out on the same still picture.

[0041]While having inputted the figure, a sound is gained from the microphone 2d as media information. Drawing 5 is what shows signs that a sound is inputted inputting a figure. The circle b1 is drawn and shown in the part which is observing the still picture displayed on the arrangement presentation part 5, while drawing the circle further, the

sound b2 "the camera is attached here" is uttered toward the microphone 2d, and it inputs as notes. The recording start of a sound is started when the circular center P0 is determined for example, and the end of record of a sound is ended when the radius of a circle is fixed. When the multiple input of the figure is carried out, the multiple input also of the sound is carried out.

[0042]The multimedia correspondence storage parts store 4 matches and memorizes each data of a still picture, a figure, a sound, and time gained as mentioned above. Signs that a file system are expressed with drawing 3. An example of the contents of a still picture, a figure, a sound, and time is shown by this drawing 3.

[0043]The multimedia correspondence storage parts store 4 will generate a unique (meaning) data name to a file system, if a still picture is gained. For example, the value of a data name counter is made into triple figures, it connects with the character string "Data", and generation of a data name is performed by ***** a counter after data name generation. Matching is performed by memorizing each data of a still picture, a figure, a sound, and time as a file which has the same data name and from which an extension differs. There are three data names, Data001, Data002, and Data004, and the case where three still pictures are gained is expressed with the example of drawing 3.

[0044]Among these, the data with data name Data002 has time file Data002.dat with still picture file Data002.pic, graphic file Data002.shp, and sound file Data002.snd. The extension "pic" is an extension with which "shp" expresses a still picture, "snd" expresses a figure, and a sound and "dat" express time.

[0045]Explanation of the contents of each data file will memorize still picture file Data002.pic as data expressed with the procession of 0 and 1 as mentioned above as shown in a2. Graphic file Data002.shp is memorized as a numerical sequence of carrying out for constructing the circular center coordinates P0 (138,438) and the radius r (37) (138, 438, 37), as shown in a3. When there are two or more figures, as shown in a2, only the number of a figure adds a numerical sequence back. Sound file Data002.snd enumerates and memorizes the integral value of -254 to 256 which carried out the A/D conversion of the sound inputted from the microphone 2d, as shown in a4. When the multiple input of the figure is carried out, after adding value-255 which does not appear, for example as data as a punctuation mark, the value which carried out the A/D conversion of the sound is added. Time file Data002.dat is saved as a character string showing the date and time like "18:28 35 seconds on July 7, 1999", as shown, for example in a5. Since time is only 1 time when a still picture is gained, only one exists about one data name.

[0046]On the other hand, if the slide switch 6a is made to slide to the right, this multimedia information processing unit will be in the presentation state which presents the information memorized to the multimedia correspondence storage parts store 4.

[0047]If it will be in a presentation state, the arrangement presentation part 5 will arrange the information memorized by the multimedia correspondence storage parts store 4 using time, and will present it on the liquid crystal display 5a. Drawing 6 shows this example and shows signs that the thumbnail of the still picture which the image acquisition section 1 gained is displayed on the calendar for one month. the column as which a thumbnail is displayed -- time -- calculation -- it is displayed on the same column as the date

calculated by the part 3. When two or more still pictures are gained on the same day, the gained time is displayed on early order from a top. For example, since it corresponds to data name Data002 of drawing 3 and Data002 was gained on July 7, the thumbnail image c1 of drawing 6 is displayed on the column on July 7 of the calendar table of drawing 6. [0048]In generation of a list display, about the days from 1 of the moon which was in the presentation state first to the end of the month, all the time memorized by the time file is read, it arranges in the order memorized early, and a table is made. A table is memorized by the multimedia correspondence storage parts store 4 by a file name called Table.tal. Drawing 7 shows the situation of rearrangement and shows signs that it has ranked with the early order of the time when three time file names were memorized sequentially from the top. The time file which memorized the same date is put in order by the early order of time from a top.

[0049]Next, a time file name is read in a head, a still picture file with the same data name is searched from a multimedia correspondence storage parts store, a thumbnail image is generated, and it displays on the column of the same date of a calendar. It reduces to the generate time of a thumbnail image together, and it not only reduces a still picture, but displays the figure matched with the still picture on it. Search of the figure matched with the still picture searches a graphic file with the same data name as a still picture file, restores the memorized graphic information, and draws on a still picture. For example, the graphic file matched with Data002.pic is Data002.shp. When it already displays on the same date, as shown in C2 of drawing 6, it displays in addition under the thumbnail image displayed by then.

[0050]Thus, it is easily discriminable by looking through the thumbnail image of a still picture what kind of data the user gained when. As for it, since a list display is automatically generated based on the time which gained the still picture, a burden is not placed on a user at all.

[0051]In a presentation state, the cursor 2a, button 2b, and the pointer 2c are used in order to specify the thumbnail displayed on the liquid crystal display 5a. A click of the thumbnail image displayed on the column on July 7 when explained taking the case of drawing 6 will display the picture shown in drawing 8. In this display, not only a still picture but a figure is displayed. The search method of the graphic file matched with the still picture file is the same as the time of generating a reduction image.

[0052]A click of the inside of the circular figure c1 displayed on the still picture displayed on drawing 8 will reproduce the sound e2 matched with the still picture. If the search method of the sound matched with the still picture is explained taking the case of Data002.pic, it will have the data name Data002 [same], and when an extension searches the file of snd, i.e., Data002.snd, it will carry out. When those with two or more, for example, the 2nd figure, are chosen, a figure searches a Data002.snd file from a head, and reproduces the 2nd sound field divided by punctuation mark-255.

[0053]Thus, by seeing the figure drawn on the still picture, by recognizing where [in a still picture] it observed, or hearing the sound further related with the figure, the user can get more detailed notes, and he can acquire rich information rather than merely seeing a still picture only.

[0054]Drawing 9 is the flow chart which summarized the above operation. According to this flow chart, the flow of processing is explained below.

[0055]First, from the state of the slide switch 6a, it investigates whether this multimedia

information processing unit is a recorded state, in the case of a recorded state, progresses to Step A2, and, in the case of the presentation state which is not so, progresses to Step A6 (Step A1).

[0056] If it stands by that the shutter release 1b is pushed and the shutter release 1b is pushed in order to gain a still picture, in the case of a recorded state, a still picture will be incorporated from the camera 1a, it will memorize it to the multimedia correspondence storage parts store 4, and will be shown to the liquid crystal display 5a (Step A2).

[0057] Next, it investigates whether the shutter release 7 was pushed by step A3, when not pushed, it returns to Step A2 and acquisition of a preview image is continued, and when pushed, the still picture which he followed to step A4 and was gained at the end is memorized to the multimedia correspondence storage parts store 4 as it is. this time -- time -- calculation -- the part 3 calculates the time when this still picture was gained (step A4).

[0058] Then, will be in the state where notes can be inputted on the gained still picture, and it will be judged whether the shutter release 1b was pushed by step A5, When pushed, the input of notes is suspended and it returns to Step A1, and when not pushed, it progresses to Step A13 and media information, such as a figure and a sound, is inputted as notes.

[0059] And when there is an input of media information, such as this figure, sound, etc., in order to memorize these to the multimedia correspondence storage parts store 4 and input notes continuously, it returns to step A5.

[0060] When it changes to a presentation state with the slide switch. 6a by a memory state, immediately, a state does not change, but after the shutter release 1b is clicked by step A5, it changes to a presentation state at Step A.

[0061] on the other hand -- Step A1 -- the case of a presentation state -- time -- calculation -- a table is created in the early order of the time calculated in the part 3 (Step A6), and a calendar list is displayed on the liquid crystal display 5a. The thumbnail image of the still picture memorized by this calendar list at the multimedia correspondence storage parts store 4 is displayed on the column of the date which gained the still picture (Step A7).

[0062] Then, it will be in the state where a thumbnail image can be clicked, and when clicked, the enlarged display of the picture clicked by progressing to step A9 is carried out, when that is not right, it returns to Step A1 and a calendar display is continued (Step A8).

[0063] It investigates whether it was clicked in the enlarged display by step A9, when clicked, it progresses to Step A11, and when that is not right, it returns to step A9 and an enlarged display is continued (Step A10).

[0064] When it progresses to Step A11, it is investigated whether the click took place on the figure, When it is not figure up, it returns to Step A1 and returns to a calendar list display, and after it reproduces the sound matched with the figure (Step A12) and reproduction finishes, in on a figure, it returns to step A9, and it continues an enlarged display.

[0065] Thus, according to the multimedia information processing unit of this 1st embodiment. Effective use of the data stored every day will be achieved without forcing a user a complicated view creation procedure by creating the view which arranges automatically multimedia information with the various structures which are not only still pictures by time and with which it not only can acquire it easily, but it searches it.

[0066]The modification which can be given to the multimedia information processing unit of this 1st embodiment is shown below.

[0067]First, although the picture information gained by this 1st embodiment was a still picture, it may not be limited to this but an animation may be sufficient as it.

[0068]In order to make it intelligible what kind of image to be captured although nothing was displayed on the screen when gaining a still picture by this 1st embodiment, on the liquid crystal display 5a, a preview image may be displayed or a finder for exclusive use may be provided.

[0069]Although the media information which the comment section 2 inputs by this 1st embodiment was a circular figure and a sound, if media information is not limited to this and the particular part of a still picture is explained, it is [anything] good. For example, the form of a figure may use not only a round shape but a rectangle, an arrow, etc. As an example of media information other than a figure, a text and a handwriting memo may be used. In the case of a text, a keyboard is attached to a device, for example, and after specifying with a pointer the position on the still picture which inputs a text, it should just be inputted. What is necessary is to stick a transparent pressure-sensitive type tablet, for example on the liquid crystal display 5a, to trace an it top with a pen, and just to input, when inputting a handwriting memo.

[0070]Although the sound inputted by this 1st embodiment was matched together with the circular figure and inputted, the media information inputted together is not restricted to a circular figure. A sound may input a figure etc. independently rather than is necessarily required. A sound may be matched and inputted to the whole still picture.

[0071]The media information inputted by this 1st embodiment may be a link. For example, a figure and other still pictures may be associated so that it may display that other still pictures click a figure. When a figure is inputted like a 1st embodiment, the input was completed, acquisition of a still picture is started immediately and acquisition of a still picture is completed after specifying the input of a link with a button etc., the input of a link, A figure and a still picture are associated using the file name memorized by the multimedia correspondence storage parts store. Correlation is performed to a graphic file by writing in the file name of the still picture of a link destination.

[0072]Although one thumbnail image was equivalent to one still picture in the calendar list display of this 1st embodiment, The still picture memorized by the time it was from the recorded state in the presentation state may be packed as one unit (session), and the still picture gained first, for example may be used as a picture representing a session as a thumbnail image. In this case, when carrying out an enlarged display, the still picture and media information corresponding to the clicked still picture are displayed, page turning over may be carried out with the cursor 2a, and the still picture and media information after the 2nd sheet may be displayed.

[0073]Although the still picture gained first was used as a representation screen in the thumbnail indication using this session, it may not restrict to this and a thumbnail image may be displayed every five sheets, for example. In this case, when the thumbnail image of the 5th sheet is specified by a presentation state, the enlarged display of the still picture of the 5th sheet may be carried out automatically.

[0074]Although the thumbnail image of notes inputted as the still picture on it was used for the calendar list display displayed by this 1st embodiment, if it turns out that there is information, it not only this but is [anything] good. For example, the icon which shows

that there is a still picture may be displayed, or a file name may be displayed.

[0075]If the calendar list display displayed by this 1st embodiment is the method of arranging and showing the picture information and media information which were memorized by the multimedia correspondence storage parts store 4 for one month although it was a unit using time, it is [anything] good. For example, it may display in order of time per a unit or one week like schedule software for one day. Or only a still picture with the same title may be looked through in order of the recorded time. Thereby, it can respond to a customer list etc. When a text is inputted as media information, the list display only of the still picture containing the character string specified by a user may be carried out to the recorded order of time.

[0076]Although the arrangement presentation part 5 of this 1st embodiment displayed the calendar list on the liquid crystal display 5a with which the device main frame was equipped, The file memorized to the multimedia correspondence storage parts store 4 may be transmitted, for example to a personal computer, may be changed into HTML form, and a list display may be carried out on a personal computer. A personal computer possesses the browser which presents the data changed into HTML form. Thus, since the HTML browser which has spread widely by changing into HTML can be used, the user can see a calendar list display, without newly installing a browser for exclusive use.

[0077]Although the enlarged display of this 1st embodiment displayed a still picture and 1 page of media information at a time on the liquid crystal display 5a, a title etc. may be displayed simultaneously. Drawing 10 shows an example of an enlarged display and the title, the font, the picture of a background, and the recording date are specified. In this example, the text is also inputted as media information and it is displayed beside the still picture. Selection of the picture of a title, a font, and a background is asked to a user about the still picture gained newly, for example, when it changes from a recorded state to a presentation state. Thus, the list nature of the arranged data increases further by inputting a title etc.

[0078]When displaying a title by the enlarged display of this 1st embodiment, the layout of a still picture, a text, etc. was immobilization, but a layout may be changed depending on a title etc. For example, there is a tendency to input the thing about in the hall [which records a display object etc. in an exhibition or an exposition], and the title with a short text which mainly gains many still pictures. Therefore, in order to arrange these legible and to show them when choosing a title, and the category of "an exhibition and an exposition" is chosen, as shown in drawing 11, the layout which has arranged the text under a still picture is chosen automatically, and is used. Or when recording a meeting, there is a tendency to input a lot of texts supplementary to the still picture to gain. Therefore, in order to arrange these legible and to show them when choosing a title, and the category a "meeting" is chosen, as shown in drawing 12, the layout which matched the still picture and the text is chosen automatically, and is used. In addition, there may be categories, such as a "travel diary" and a "guest person." It may change so that the picture of a background may become suitable by the contents. The picture of a suitable background may be automatically chosen as the season according to the season which recorded the still picture. One spot's picture may be chosen at random and may be arranged. Thereby, an enlarged display screen with originality can be generated automatically.

[0079]Matching of a category and a layout prepares the table which matched the category

and the layout by 1 to 1, for example, and when a category is specified, it should just generate an enlarged display using the layout corresponding to it. Thereby, the kind of data to record enables it to generate the optimal enlarged display automatically.

[0080]Although it clicked the circular inside of a figure, if selection of the figure in the enlarged display of this 1st embodiment is the method of choosing a figure, it not only this but is [anything] good. For example, the line segment and circle top which constitute a figure may be clicked and chosen.

[0081](A 2nd embodiment), next a 2nd embodiment of this invention are described.

[0082]Drawing 13 is a figure showing the outline composition of the multimedia information processing unit concerning a 2nd embodiment of this invention, and drawing 14 is a figure showing an example of the appearance of the multimedia information processing unit of this 2nd embodiment.

[0083]Using GPS (GlobalPositioning System) etc., the multimedia information processing unit of this 2nd embodiment acquires the position which gained picture information, and a position arranges the acquired multimedia information and it presents it.

[0084]That is, although arrangement presentation of the acquired multimedia information was carried out in a 1st above-mentioned embodiment by the time which gained picture information, not time but a position is used for this 2nd embodiment as information used in order to carry out arrangement presentation.

[0085]Drawing 13 gives identical codes to drawing 1 and an identical configuration element, and gives numerals only to a different component newly. drawing 13 -- the time of drawing 1 -- calculation -- the position which there is no part 3 and comprises GPS etc. -- calculation -- the composition which added the part 7 is shown. a position -- calculation -- a portion which is different here since the composition of those other than part 7 is the 1st embodiment and identical configuration, i.e., a position, -- calculation -- only the part 7 is explained including correspondence with drawing 14.

[0086]a position -- calculation -- the part 7 calculates a position, in order to identify whether the picture information which the image acquisition section 1 gained was gained at which place. It is constituted from the example of drawing 14 by GPS7a.

[0087]Hereafter, a still picture is explained like a 1st embodiment taking the case of a figure and a sound as media information which the comment section 2 inputs as a picture which the image acquisition section 1 acquires.

[0088]First, a still picture is gained like a 1st embodiment using the camera 1a. The gained still picture is memorized by the multimedia correspondence storage parts store 4, and the memorized still picture is displayed on the liquid crystal display 5a.

[0089]a position -- calculation -- the part 7 calculates the position from which the image acquisition section 1 gained the still picture. A position is calculated like north latitude 35-degree 32-minute and 45 seconds, and east longitude 139-degree "41 minutes and 42 seconds", using the longitude and latitude which were obtained by GPS.

[0090]The multimedia correspondence storage parts store 4 matches and memorizes each data of a still picture, a figure, a sound, and a position. In the multimedia correspondence storage parts store 4, drawing 15 shows signs that a still picture, a figure, and a position are memorized, gives identical codes to a 1st embodiment and identical parts, and gives new numerals to a different portion. Each data of a still picture, a figure, a sound, and a position is memorized as a file by the hard disk a1 which has a file system like a 1st

embodiment.

[0091]The file name of a position file connects and generates "pos" which is an extension showing a position to data names, such as "Data002", as well as other information. It matches with other information by attaching the same data name as other information to the file name of a position file. The contents of position file Data002.pos are stored by the character string of north latitude 35-degree 32-minute and 45 seconds, and east longitude 139-degree "41 minutes and 42 seconds", as shown in fl. Operation of others of a memory state is the same as that of a 1st embodiment.

[0092]Next, only a different portion from a 1st embodiment is explained about operation of a 2nd embodiment at the time of an instruction state.

[0093]If it will be in a presentation state, the arrangement presentation part 5 will arrange the information memorized by the multimedia correspondence storage parts store 4 using a position, and will present it on the liquid crystal display 5a. Drawing 16 shows this example and shows signs that a thumbnail image with the media information which the still picture which the image acquisition section 1 gained, and the comment section 2 inputted is displayed on a map.

[0094]The map file "map.pic" in which map information was stored beforehand is memorized by the multimedia correspondence storage parts store 4, and the display of a map displays this. A position file "map.pos" for the position information which shows the range of the position of a map to match is shown in a map file. The position of the point P2 in drawing 16 and the point P3, for example, north latitude 35-degree 33-minute and 05.seconds, and east longitude 139-degree "41 minutes and 09 seconds", and north latitude 35-degree 32-minute and 33 seconds, and east longitude 139-degree "42 minutes and 05 seconds" are memorized.

[0095]Where [on the liquid crystal display 5a] it displays asks for a thumbnail image as follows. drawing 17 -- P2 (X2, Y2), P3 (X3, Y3), and a position position -- calculation -- the position P4 (X4, Y4) calculated in the part 7 shows the position displayed on the liquid crystal display 5a. If the coordinate value on the liquid crystal display 5a of these P2, P3, and P4 is set to p2 (x2, y2), p3 (x3, y3), and p4 (x4, y4), the coordinate value of P4 will be calculated by the following (1) - (2) formulas.

[0096]

$$x4 = (x3 - x2) * (X3 - X4) / (X3 - X2) \text{ -- (1) Formula}$$
$$y4 = (y3 - y2) * (Y3 - Y4) / (Y3 - Y2) \text{ -- (2)}$$

If (2) type thumbnail image is clicked by the same method as a 1st embodiment. The enlarged display of the media information drawn the still picture corresponding to a thumbnail image and on it is carried out. Operation of others of a presentation state is the same as that of a 1st embodiment.

[0097]Drawing 18 is the flow chart which summarized the above operation, and explains the flow of processing according to this flow chart below. This drawing 18 gives identical codes to drawing 9 and identical parts which are the flow charts of a 1st embodiment, gives numerals only to a different portion newly, and explains only a different portion from a 1st embodiment here.

[0098]if the shutter release 1b is pushed by step A3 and a still picture is incorporated -- a position -- calculation -- the position from which the still picture was gained is calculated in the part 7 using GPS etc. (Step B1). The remaining processing operation at the time of a memory state is the same as that of a 1st embodiment.

[0099]When it progresses to step B-2 by a presentation state, a thumbnail image with the

media information inputted by the still picture gained by the image acquisition section 1 on the map displayed on the arrangement presentation part 5 and the comment section is displayed on the coordinates corresponding to the position from which the still picture was gained. The remaining processing operation at the time of a presentation state is the same as that of a 1st embodiment.

[0100]Thus, according to the multimedia information processing unit of this 2nd embodiment. Effective use of the data stored every day will be achieved without forcing a user a complicated view creation procedure by creating the view which arranges automatically multimedia information with the various structures which are not only still pictures by a position and with which it not only can acquire it easily, but it searches it.

[0101]The modification which can be given to the multimedia information processing unit of this 2nd embodiment is shown below.

[0102]first, the position of this 2nd embodiment -- calculation -- although the part 7 calculated the latitude and longitude on the earth using GPS, if a position understands it, it is not limited to this but is [anything] good. For example, it may calculate having gained the still picture within a fixed distance from the base station using a radio wave beacon. In addition, an infrared beacon, a geomagnetism sensor, an altimeter, etc. may be used, or a user may read the bar code stretched by the wall and may calculate a position. It is good also considering this as a position to carry out character recognition of the picture projected on the preview screen, and gain a room number.

[0103]moreover -- although the picture which the arrangement presentation part 5 presents by this 2nd embodiment was a map -- a position -- calculation -- it is [anything] good if the position calculated in the part 7 can be used. For example, a drawing, a train line figure, etc. of a factory may be sufficient. Or a list display may be carried out according to conference room. For example, the list display of all the data of the past gained in A conference room may be put in order and carried out to the early order of time.

[0104]moreover -- this 2nd embodiment -- a position -- calculation -- although the part 7 calculated the position and the position arranged and showed the arrangement presentation part 5 -- a 1st embodiment -- like -- time -- calculation -- a part may be provided, time may be calculated, and the arrangement presentation part 5 may also arrange and present time. In this case, the switch which specifies whether time shows whether a position shows for example, is formed.

[0105](A 3rd embodiment), next a 3rd embodiment of this invention are described.

[0106]Drawing 19 is a figure showing the outline composition of the multimedia information processing unit concerning a 3rd embodiment of this invention, and drawing 20 is a figure showing an example of the multimedia information processing unit of this 3rd embodiment.

[0107]The information inputted into the schedule software of the individual or the group arranges the multimedia information processing unit of this 3rd embodiment, and it is shown.

[0108]Namely, although arrangement presentation of the acquired multimedia information was carried out in a 1st above-mentioned embodiment and a 2nd embodiment by the time and the position which gained picture information, The schedule of an individual or a group is further used for this 3rd embodiment as information used in order to carry out arrangement presentation.

[0109]Drawing 19 gives identical codes to drawing 1 and an identical configuration element, and gives numerals only to a different component newly. Drawing 19 shows the composition which added the schedule management section 8 and the schedule selecting part 9 to the component of drawing 1, and accepts and explains the portion 8 different here from a 1st embodiment, i.e., a schedule management section, and the schedule selecting part 9.

[0110]The schedule management section 8 comprises a hard disk and a file system, for example, manages the schedule element of "holding a conference from <1>:00 to <2>:00 on August 2" as one file.

[0111]the time out of the schedule element in which the schedule selecting part 9 is managed by the schedule management section 8 -- calculation -- the element in which the time calculated in the part 3 is contained is chosen.

[0112]Hereafter, a still picture is explained like a 1st embodiment taking the case of a figure and a sound as media information which the comment section 2 inputs as a picture which the image acquisition section 1 acquires.

[0113]First, a still picture is gained like a 1st embodiment using the camera 1a. the gained still picture is memorized by the multimedia correspondence storage parts store 4, and the memorized still picture is displayed on the liquid crystal display 5a -- time -- calculation -- the part 3 calculates the time when the still picture was gained.

[0114]As for the schedule management section 8, as shown in drawing 21, the schedule of an individual or a group manages one schedule element as one file. A schedule element is a group of the date, time, and a schedule name, and "10:00 on July 7 to 12:00 and a meeting" are memorized in the example of drawing 21 by the file "Schedule.001." When a new schedule element is generated, the extension of a file name is *****ed and a schedule element is generated so that a file name may not overlap.

[0115]When the timing which a schedule generates makes the slide switch of record/directions switch part 6 3 ream type and "Schedule" is chosen for example, it is made to change to the schedule generation screen shown in drawing 22. In the case of this example, it is in the beginning which changed at the place whose pointer is time, and the cursor 2a is made to go up and down, the date is changed, and the date on "July 7, 1999" is set up. If the cursor 2a is moved to the right, a pointer will move to the next setting out, schedule start time can be set up now, and "10:00 to 12:00" is set up. From the lists prepared beforehand, a schedule name makes the cursor 2a go up and down, and is chosen. After all the setting out finishes, a schedule is made to become final and conclusive by pushing the button 2a, a "meeting" is set up, and the schedule management section 8 generates a file newly, and memorizes these contents.

[0116]the time out of the schedule element in which the schedule selecting part 9 is managed by the schedule management section 8 -- calculation -- the thing containing the time which the part 3 calculated is chosen. the example of drawing 22 -- time -- calculation, when the part 3 measures "10:42 56 seconds on July 7, 1999", Since this time is contained in "the schedule at "10:00 to [July 7", 1999] 12:00 on July 7, 1999 memorized by "Schedule.001"", this schedule element is chosen.

[0117]Like a 1st embodiment, the multimedia correspondence storage parts store 4 also matches and memorizes a schedule element while memorizing a still picture, a figure, a sound, and time. Matching of a schedule element generates the file in which an extension

has ".scd" with the same data name like a 1st embodiment, and memorizes the file name memorized by the schedule management section 8 to this file. When a still picture file name is "Data002.pic", the file name of a schedule element is set to "Data002.scd", and "Schedule.001" is written in the file and it is memorized. Operation of others of a memory state is the same as that of a 1st embodiment.

[0118]Next, only a different portion from a 1st embodiment is explained about operation of a 3rd embodiment at the time of a presentation state.

[0119]In a presentation state, if a calendar display as shown in drawing 23 is performed like drawing 6 and a thumbnail image is clicked, the enlarged display shown, for example in drawing 8 will be carried out. When creating an enlarged display and there is a schedule containing the time which gained the still picture, the title of a schedule, other time, a place, etc. are displayed on the title of an enlarged display.

[0120]The judgment of the existence of the schedule containing the time which gained the still picture, In this example, the display of data name Data002, After reading a file name called Schedule.001 first written in into file Data001.scd, The schedule of file Schedule.001 memorized by the schedule management section 9 is read, and it detects that Data002 is matched with the schedule at 12:00 from 10:00 on July 7, 1999.

Operation of others of a presentation state is the same as that of a 1st embodiment.

[0121]Drawing 24 is the flow chart which summarized the above operation, and explains the flow of processing according to this flow chart below. This drawing 24 gives identical codes to drawing 9 and identical parts which are the flow charts of a 1st embodiment, gives numerals only to a different portion newly, and explains only a different portion from a 1st embodiment here.

[0122]First, the state of the slide switch 6a is investigated, and it detects whether it is in which state among three, record, presentation, and a schedule input, in the case of a recorded state, progresses to Step A2, in the case of a presentation state, progresses to step A3, and, in the case of a schedule input state, progresses to Step C4 (Step C1).

[0123]In the case of a schedule input state, a schedule is inputted and it returns to Step C1 (Step C4).

[0124]After in the case of a recorded state incorporating a still picture, inputting notes like a 1st embodiment, pushing the shutter release 1b by step A5 and completing the input of notes, The schedule containing the time when the schedule selecting part 9 recorded the still picture is chosen from the schedule management section 8, and it memorizes to the multimedia correspondence storage parts store 4, and returns to Step C1 (Step A2). In the case of a presentation state, the same operation as a 1st embodiment is carried out.

[0125]Thus, according to the multimedia information processing unit of this 3rd embodiment. The data stored every day can be searched efficiently, without forcing a user a complicated view creation procedure by creating automatically the view which it not only can acquire easily multimedia information with the various structures which are not only still pictures, but arranged it in schedule form.

[0126]The modification which can be given to the multimedia information processing unit of this 3rd embodiment is shown below.

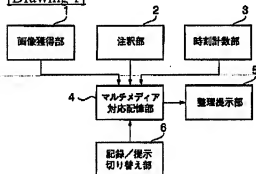
[0127]First, although arrangement presentation was carried out in this 3rd embodiment in connection with the time which gained the still picture, and the time of a schedule, it is [anything] good if based on the relation of the annotation information attached not only to

this but to the still picture, and the element of a schedule. For example, when the position which recorded the still picture when the position which recorded the still picture was acquired like a 2nd embodiment and a place was described by the schedule, and the position of a schedule are the same, it may be made to display a thumbnail image.
[0128]

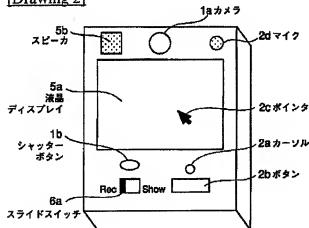
[Effect of the Invention] If the multimedia information processing unit of this invention is used as explained in full detail above, In order not to force a user a complicated view creation procedure by creating the view which it not only can acquire multimedia information with structure easily, but time, a position, and a schedule arrange automatically and it searches, Without being conscious of how data is stored, data can be stored effectively and the user can search it.

DRAWINGS

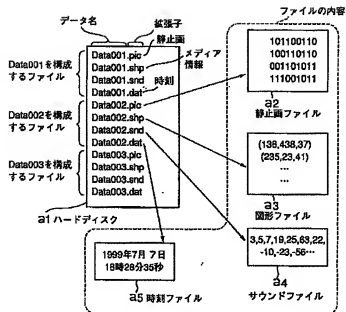
[Drawing 1]



[Drawing 2]



[Drawing 3]

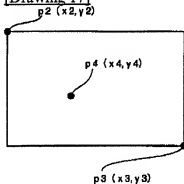


[Drawing 7]

d1 時刻ファイルテーブル

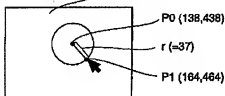
Data001.dat	1999年7月07日18時05分32秒
Data002.dat	1999年7月16日18時28分35秒
Data004.dat	1999年7月19日10時21分17秒

[Drawing 17]

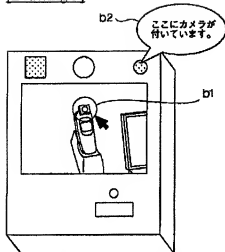


[Drawing 4]

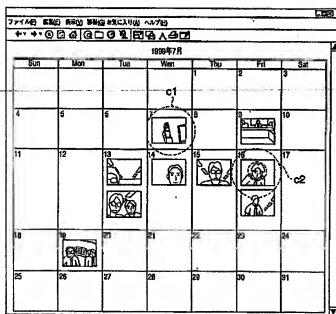
5a 液晶ディスプレイ



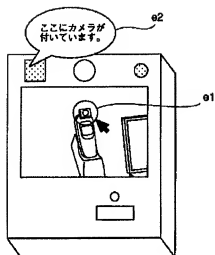
[Drawing 5]



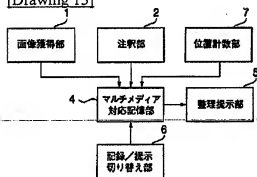
[Drawing 6]



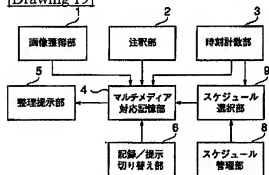
[Drawing 8]



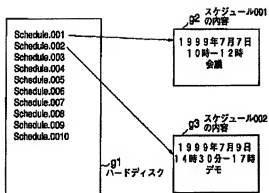
[Drawing 13]



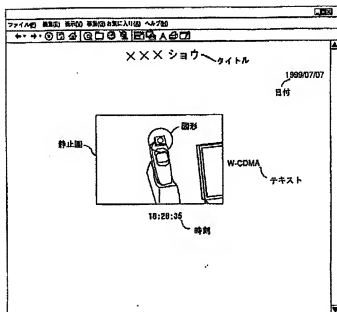
[Drawing 19]



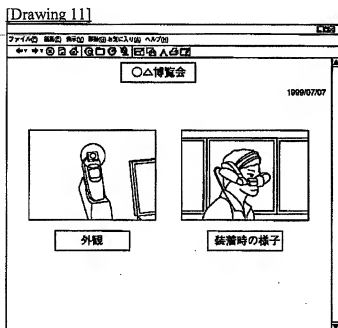
[Drawing 21]



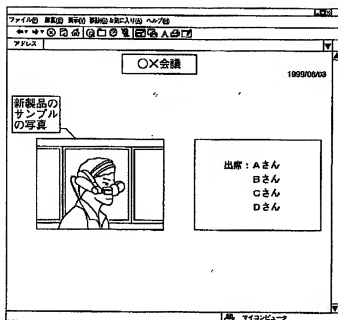
[Drawing 9]



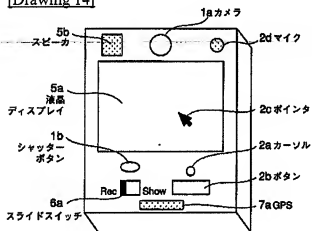
[Drawing 10]



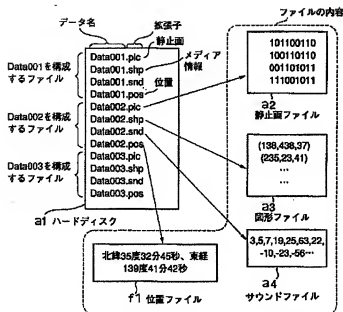
[Drawing 12]



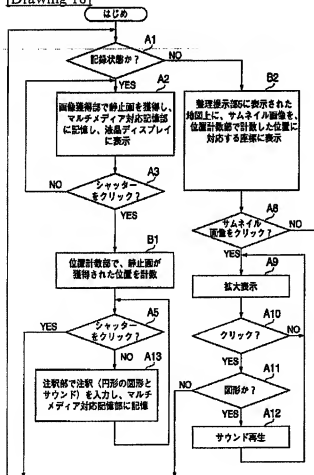
[Drawing 14]



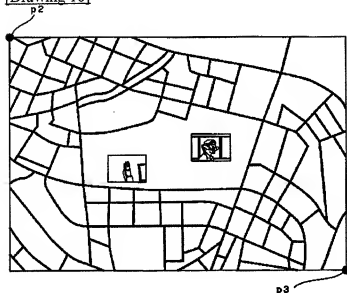
[Drawing 15]



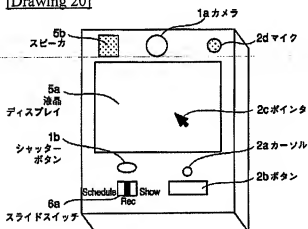
[Drawing 18]



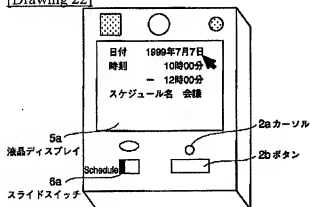
[Drawing 16]



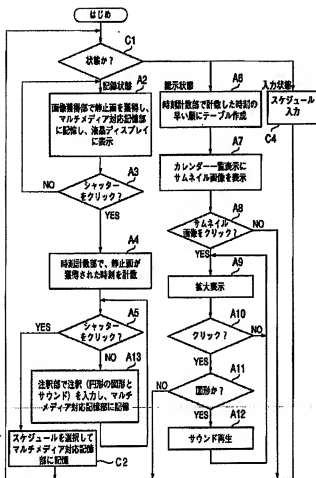
[Drawing 20]



[Drawing 22]



[Drawing 24]



[Drawing 23]

今日	明日	後日	明後日	後々	再来日
曜日	月	火	水	木	金
日付	6日(月)	7日(火)	8日(水)	9日(木)	10日(金)
午前 8:00					
9:00					
10:00					
11:00					
午後 12:30					
1:00	A会議室 ×××××				
2:00			ブレイクタイム		
3:00					会議
4:00	社員研修				
5:00		退社			
6:30					
7:00					
8:30					
9:30					

1996年5月21日 金曜日 午便8:05

午便3:00-午便5:30